Notes on the Mollusca of Prince William Sound, Alaska

BY

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DURING THE LATER part of June and early July 1965, I had the opportunity to observe and collect marine invertebrates on and about Prince William Sound, Alaska. Prince William Sound is actually a northern extension of the Pacific Ocean and is separated from the sea by several major islands, between which open channels allow free passage and intermingling of sea waters. There are many islands and island groups around the periphery of this sound, and the mainland coasts are cut by numerous deep fjord-like bays and inlets, many of which are headed by active glaciers. A few days prior to my arrival in the area, a biologist working on temperature transects of this region noted a surface water temperature range from 8° C to 4° C (south to north), and on the freshwater lenses near the glaciers the temperature was 2° C. The tree line is between 800 and 900 feet above sea level, and the snow line was approximately 1000 feet above sea level during the time of my stay. The weather was wet, with many rain storms, as well as heavy mists, and at times strong winds, which forced small craft to shelter.

The southeastern portion of Prince William Sound was the area of major uplift during the earthquake of March 27, 1964; some localities were elevated in excess of 30 feet. It appears that the uplift occurred within the few minutes of tectonic activity, as dead specimens of various marine animals were found *in situ*, adhering to the rocky faces that in pre-earthquake times had been subtidal. It appeared that the animals did not have enough time to move downward and remain in the water as the water receded, or, actually, as the land moved upward. One interesting feature noted was several tree stumps, rooted in the substrate in what had been a subtidal level, and which now was elevated well above the present high-tide level at McLeod Bay on Montague Island. How long ago this forest lived above sea level, when it was submerged into the sea, and how long it remained submerged are questions that I cannot answer, but the emergence of the stumps above sea level is a very good indication of the instability of this region.

My guide was Mr. Rae Baxter, Shellfish Biologist, Alaskan Department of Fish and Game, with headquarters at Cordova, Alaska. I accompanied him on board the Department's research craft "Montague," a 24-foot modified "Doghouse Skiff," very similar to the fishing craft used by local commercial fishermen who drift floating gill nets. The "Montague" differed by being slightly wider, having a two-man cabin, and an enclosed wheel house. This small craft was our mobile home and field laboratory for three weeks as we moved about the islands, channels, and bays of Prince William Sound.

Upon our return we compared our observations and lists of specimens with the distributional lists of DALL (1921), EYERDAM (1924), OLDROYD (1924-1927), KEEN (1937), BURCH (1945-1946) and LA ROCQUE (1953). We found that with the exception of EYERDAM, there were little if any data pertaining to ecology, abundance, or paucity of the marine mollusks inhabiting this area. We also found that in our collections there were specimens representing species that had not been previously recorded from these northern latitudes, and some definite collecting localities for species which had previously been listed only as from "Alaska" or "Gulf of Alaska."

After considering the information as to distribution, ecology, and status of the marine mollusks of this region, we decided that it would be more appropriate if we confined our discussion to such information and covered taxonomic matters only where it was absolutely necessary. There is some confusion as to the proper taxa to be used on many of these northern mollusks, which may be due to lack of series of specimens in collections. It was found, not surprisingly, that in a number of cases a species varied from location to location, and even among individuals within a single population. The taxa used in this report are those of the authors listed above, with few exceptions. These will be explained as needed.

Both Mr. Baxter and I have made special studies of certain families of marine mollusks, and we considered it advisable for each of us to contribute portions to this report covering the groups with which we are more familiar. Thus, here only a few of the families of marine mollusks found on and about Prince William Sound and portions of the Kenai Peninsula will be covered. All localities mentioned may be found on Coast and Geodetic Survey Chart No. 8551.

Observations and collections were made along the east shore of Hawkins Island, Boswell Bay on Hinchinbrook

Island, Stockdale Bay, Port Chalmers, Hanning and McLeod Bay on Montague Island, Green Island and Channel Island in Montague Strait, Squirrel Island in the Knight Island Group, Eshamy Inlet and Falls Bay on the west mainland of the Sound and at Cedar and Well's Bay on the north shore of Prince William Sound. Dredging was carried out offshore of these stations.

ARCHAEOGASTROPODA

Scissurellidae

Scissurella are tiny, and rare to uncommon in collections. The exact status of certain taxa is uncertain, probably due to the lack of sufficient comparative material. In this discussion I will use the names applied by Dall for the two species he described from the Pacific coast. Both were taken in Prince William Sound, a northern extension of the published ranges.

Scissurella kelseyi Dall, 1905.

A few dead shells were dredged in 25 fms off Woodcock Point, McLeod Bay, Montague Island. The bottom in this locality appeared to be a sump and was composed of sand, mud, fine gravel, broken shell, and broken dead bryozoa. It is possible that living examples might have been taken in deeper water or perhaps in lesser depths on either rocks or alga holdfasts. A second location for this species was found in 25 fms off Cedar Bay on the north side of the Sound. Here the bottom conditions were very similar, but the bryozoa were lacking.

Scissurella chiricova Dall, 1919.

This species is distinguished from the preceding one by having weaker sculpturing and a more elevated spire. Specimens were taken in association with the first-named scissurellid off Woodcock Point. The species seems to be much rarer than *Scissurella kelseyi*, and we located no specimens that might be considered intergrades between the two.

Fissurellidae

Diodora aspera (Eschscholtz, 1833).

This fissurellid was relatively common in suitable habitats, especially in the seaward area of Prince William Sound. There was nothing special to distinguish specimens of this species except a lesser size when compared with Puget Sound material. The largest specimen collected measured 51 mm by 36 mm.

Puncturella noachina (Linnaeus, 1771).

Two specimens were dredged off Woodcock Point on Montague Island, in 17 fms, from a mud and small rock bottom. MacGinitie (1959) places this species as far south in the Pacific as Stephens Passage near Juneau, Alaska; Prince William Sound is actually north. Baxter has several records of this species from Port Dick on the Kenai Peninsula. The range of the speces is circumboreal.

Puncturella cucullata (Gould, 1846).

Eyerdam refers to this species from Drier Bay, Knight Island, Prince William Sound but did not specify if his specimens were dead or live taken. We found two specimens on the elevated shore at Woodcock Point. From the paucity of known specimens, this species appears to be rare in this region.

Puncturella galeata (Gould, 1846).

This was the second most common species of the genus in the Sound. Baxter has records of this species from numerous stations. We took them living in the deep intertidal at Woodcock Point and as beach shells on all elevated terraces in the southern portion of the Sound.

Puncturella cooperi Carpenter, 1864
(*P. eyerdami* Dall, 1924, syn.)

This paper is not intended to be a taxonomic discussion, but a few brief notes are here given for clarification. Most northern shells of the genus *Puncturella* are unworn, and even when relatively large in size have little adhering marine growth, plant or animal. Thus the finer detailed sculpturing is usually intact. Carpenter's species, from southern waters, usually is overgrown, and the ultra-fine pores between the ribs seldom show. When Eyerdam collected the specimens submitted to Dall, the latter renamed the species, not realizing that he had unworn material. The species was dredged in several localities in the Sound, but at no place may it be called plentiful, as only one or two specimens per locality were collected.

Puncturella multistriata Dall, 1914.

This is the most common species of this genus in these waters. Living examples were taken at several localities on Montague Island, and dead shells were picked up on most of the elevated terraces, in windrows. As far as this genus is concerned the species may be classed as abundant in Prince William Sound.

Puncturella sp.?

Two examples, one living and one dead, were dredged off Cedar Bay in 25 fms, which appear to be a distinct species. However, until sufficient specimens are obtained for definite comparisons, I mention these shells here only to illustrate the abundance of species of *Puncturella* in this region.

Lepetidae

It appears that few taxonomists will agree in all details as to the actual number of species and subspecies of *Lepeta* that may be found in the Gulf of Alaska. In this discussion I will refer to two species, which may or may not be correct. *Lepeta caeca* (Müller, 1776) has been recorded by Cowan (1964) south of Prince William Sound, and by MacGinitie (1959) south and west of the Sound. None of the materials collected in 1965, or in the Baxter collection match material of typical *L. caeca,* available for comparison from Norway and Frenchmans Bay, Maine. It is difficult or impossible to separate *L. concentrica* Middendorff, 1851 from *L. caecoides* Carpenter, 1865, as the diagnostic features in any large series merge one into the other. I am not certain exactly what Dall meant with his *L. alba* Dall, 1869, or *L. a. instabilis* Dall, 1869, but MacGinitie places both of these names in the synonymy of *L. caeca.*

In Prince William Sound, *Lepeta* were found living on the rocks from the post-earthquake mid-intertidal zone down to our deepest dredging, at 25 fms. They were not common, but a few to many could be collected at each station.

Acmaeidae

Acmaea mitra Eschscholtz, 1833.

Specimens were collected at all suitable locations, well within the range of the species.

Acmaea pelta Eschscholtz, 1833.

Token sets taken, common at all suitable locations.

Acmaea scutum Eschscholtz, 1833.

Common at all suitable locations.

Acmaea fenestrata cribraria Carpenter, 1866.

As in the case of the above listed species, only token collections were made, until we reached the area which had an uplift of ten feet or more. At that time, a definite search had to be made for this species, which has a restricted ecological distribution. At the present time it appears that this species has been lost in the major uplift region, but as it still is plentiful in portions of the Sound, it may become reestablished in time.

Acmaea digitalis Eschscholtz, 1833.

This was one of the species that I was especially interested in as the ecological habitat is restricted to the splash zone. No living specimens were found in the higher elevated shore lines, although numerous dead shells were found in the drift. A few living examples were eventually discovered along the rocky ledges of the "Hinge" region, and in due time the new intertidal splash zone will be repopulated.

Acmaea paradigitalis Fritchman, 1960.

Specimens were collected at Boswell Bay, Hinchinbrook Island, at Stockdale Harbor and Port Chalmers, Montague Island, and at several localities on Hawkins Island, all in areas of lesser uplift (6 to 10 feet), but only dead shells were found in the areas of major uplift. The species is less common than on the northern California-Oregon-Washington coasts. This Prince William Sound population is a definite northern extension of the published range of the species.

Acmaea persona Eschscholtz, 1833.

Found in close association with *Acmaea fenestrata cribraria*; not common.

Acmaea instabilis (Gould, 1846).

The species was found living at only one locality, Woodcock Point, McLeod Bay, Montague Island. Two specimens, both on rock and both distorted, were collected. The palm-form kelp (*Postelsia*) was restarting in the low intertidal, but at the time of collecting, it had only covered a few ledges. The elevated pre-earthquake intertidal area was littered with the dead holdfasts of this type of kelp and many shells of this oddly shaped limpet were found, but, like the kelp and other forms which had been elevated, all were dead, yet many *in situ.*

Acmaea peramabilis Dall, 1872.

A few living specimens were collected at Woodcock Point and a few at Eshamy Inlet on the west side of the Sound on the mainland. All were taken from off rocky faces well below the low-low water.

Acmaea sp.?

At least three additional *Acmaea* were present in material from Woodcock Point, Montague Island, but definite identification is questioned. There was one tiny shell dredged in 17 fms, which matches a specimen of Dall's *A. aleutica* (=*A. apicia*). From the deep intertidal area, one tiny rose-colored specimen has the forward apex of *A. rosea* Dall, and there are two specimens of an undescribed species previously found only along the California-Oregon Coasts.

MESOGASTROPODA

Lamellariidae

Lamellaria stearnsii Dall, 1871.

Dall diagnosed two subspecies with overlapping ranges, so only the nominate name will be used. Comparison of Prince William Sound specimens with California material failed to reveal any major difference except size. The northern examples are somewhat larger. One living specimen was collected in association with, but not on, an

ascidian at Cedar Bay on the north mainland shore. Beach shell were taken in drift at many localities.

VELUTINIDAE

The literature available lists eight species of *Velutina* which may or may not occur in this region. Of course, some of these names may be synonyms, and there is little or no information on the soft parts. We found in the field that the differences of the soft parts were, in some cases, more important than the shells.

Velutina velutina (MÜLLER, 1776)
(= *V. laevigata* of authors)

Found in association with, but not on ascidians, usually on the bottom of a rock or on the rock faces of narrow crevices. The calcareous shell is covered by a periostracum, and there is definite cording on both. The animal is a uniform tan in coloration. This species is common in Prince William Sound.

Velutina prolongata CARPENTER, 1865.

This is the most abundant species of *Velutina* we found. The shell is thin and fragile, only slightly calcified. The animal is colorful, cream, with a rim around the foot and the two tentacles orange colored. There is a mottled black and white mantle around the shell.Living specimens were taken in association with, but not on, ascidians and in company with *V. velutina.*

Velutina rubra WILLETT, 1919

WILLETT described this species from Forrester Island, Alaska, and as far as I could learn, WILLETT's original lot and our Prince William Sound specimens are the only research material available. The shell is chitin-like and unless preserved in some liquid (such as alcohol + glycerin) the shell will disintegrate and crumble. The specimens were taken in association with scarlet ascidians, and the animal is brilliant scarlet. The animal is small for the shell. Collected at both Woodcock Point, Montague Island, and Cedar Bay on the north coast of the Sound.

EPITONIIDAE

Epitonium greenlandicum (PERRY, 1811).

Fragments which were identified as this species were found amid the elevated terraces at both Woodcock Point and on Channel Island (between Montague Island and Green Island in Montague Channel). Prince William Sound is within the range of this species.

Epitonium indianorum CARPENTER, 1865.

No living examples were taken in 1965, but Baxter has the species from several localities on the Sound. Two beach shells were picked up at Woodcock Point on Montague Island. EYERDAM (1924) does not list this species from Knight Island and stated that he had not found the species on the Sound. Evidently it is rather uncommon.

Epitonium sp.? *cf. E. caamanoi* DALL & BARTSCH, 1910.

A single dead beach shell, picked up in a crevice at Woodcock Point, Montague Island, may or may not be this species. The original description is of a small shell, slightly less than 10 mm long. There is a specimen in the California Academy of Sciences that is about 12 to 15 mm long. The single specimen from the elevated beach on Prince William Sound matches in all details the description of *E. caamanoi,* except for size. Like the type, this specimen is truncated, but it is still 31 mm long.

Opalia wroblewskyi (MÖRCH, 1876).

Fragments and dead shells were dredged in Montague Channel, and specimens were obtained on the elevated reef at Channel Island. Baxter has taken this species at Port Dick, Kenai Peninsula, and Willett collected the species at Forrester Island, Alaska. *Opalia wroblewskyi* appears to be uncommon in collections, whereas the more southern *O. chacei* STRONG, is often labelled as the northern species. *Opalia wroblewskyi* is more slender, has the lower whorls unsculptured, and is much larger than *O. chacei.*

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LITERATURE CITED

BURCH, JOHN QUINCY

1945-1946. Distributional list of the west American marine mollusks from San Diego to the Polar Sea. Proc. Conch. Club

So. Calif. part 2, 1 (46-54) – March-November 1945; 2 (55 to 63) – December 1945 to September 1946

Cowan, Ian McTaggart

1964. New information on the distribution of marine Mollusca on the coast of British Columbia. The Veliger 7 (2): 110 to 113 (1 October 1964)

Dall, William Healey

1921. Summary of the marine shellbearing mollusks of the northwest coast of America, from San Diego, California, to United States National Museum, . . . Smithson. Inst., U. S. Nat. Mus. Bull. 112: 1 - 217; plts. 1 - 22 (24 February 1921)

1924. A new Alaskan *Puncturella.* Nautilus 37 (4): 133

Eyerdam, Walter

1924. Marine shells of Drier Bay, Knight Island, Prince William Sound, Alaska. Nautilus 38 (1): 22 - 28

Keen, A. Myra

1937. An abridged check list and bibliography of West North American mollusca. Stanford Univ. Press, Stanford, Calif. pp. 1 to 88.

La Rocque, Aurèle

1953. Catalogue of Recent Mollusca of Canada. Nat. Mus. Canada, Bull. 129; ix + 1 - 406

MacGinitie, Nettie

1959. Marine Mollusca of Point Barrow, Alaska. Proc. U. S. Nat. Mus. 109 (3412): 59 - 208; plts. 1 - 27

Oldroyd, Ida Shepard

1924. The marine shells of the west coast of North America. Stanford Univ. Publ. Geol. Sci., 1: 1 - 247; plts 1 - 57

1927. The marine shells of the west coast of North America. 2 (1): 297 pp.; 22 plts. Stanford Univ. Press, Stanford, Calif.

1927. The marine shells of the west coast of North America. Stanford Univ. Publ. Geol. Sci. 2 (2): 304 pp., 42 plts.

1927. The marine shells of the west coast of North America. Stanford Univ Publ., Geol. Sci. 2 (3): 1 - 339; plts. 73 - 108

NOTES & NEWS

Range Extension for *Tylodina fungina* Gabb, 1865 (Gastropoda)

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This report, the first of the occurrence of *Tylodina fungina* Gabb, 1865 in the Gulf of California, Mexico, concerns a living specimen taken at Guaymas, January 7, 1966. The specific location where this shell was found is the north side of Punta Colorado, at a — 2.0 tide, at the water's edge on the underside of a rock. The animal had made a brilliant yellow spiral track on the face of the rock. The body was also brilliant yellow.

According to Oldroyd (Marine shells of the west coast North America, 1927, vol. 2, part 1), the type locality of this species is Santa Barbara, California. The typical range is from Santa Barbara to San Diego, California.

The single specimen measures 9 mm in length and 7 mm in width. The range extension is approximately 2660 kilometers from San Diego, California, to Guaymas, Sonora, Mexico.

Erroneous Range Extension for *Tivela stultorum* (Mawe, 1823)

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Tivela stultorum (Mawe, 1823) (Veneridae) has been erroneously reported from the Gulf of California, as a range extension. In The Veliger 4 (1): 22, *T. stultorum* was reported living at Bahía San Luis Gonzaga, 200 km south of the International Line, by Dr. Donald Shasky. He reported having seen living specimens at low tide on the sand spit west of Willard Island.

This fact was mentioned to Mr. Warren Garrett of South Pasadena who frequently flies his plane into Baja California. He said that he knew the man who transplanted loads of *Tivela stultorum* from San Quintín to Bahía San Luis Gonzaga. No further evidence regarding the presumably fallacious report was available at that time.

On a trip to Gonzaga Bay in February, 1966, I had the good fortune of meeting and talking with Mr. Charles Ceybert of Imperial, California, who had "created" the range extension. He confirmed Mr. Garrett's statement and claborated on it by saying that he flew the clams in